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Owing to changes in standards and equipment, the characteristics given in the text and images in this document are not bound by us and are subject to change.

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MAGELIS XBT GT

Quick reference guide

Edition December 2005

a brand of Schneider Electric

Telemecanique

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Safety Instructions

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation, which **will result** in death, serious injury or equipment damage.

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, can result in death, serious injury, or equipment damage.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation, which, if not avoided, can result in personal injury or equipment damage.

DISCLAIMER

Electrical equipment should be serviced only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material. This document is not intended as an instruction manual for untrained persons.

Presentation

The XBT GT series are UL/cUL listed and CSA certified products.
These units have been developed to the following standards:

- **UL 508**
Industrial Control Equipment.

- **UL 1604**
Electrical Equipment for Use in Class I and Class II Division 2 and III, Hazardous Locations.

- **CAN/CSA-C22.2, No. 14 and No.213**
Industrial Control Equipment- Miscellaneous Apparatus - For Hazardous Locations.

UL 1604 Conditions of Acceptability and Handling Cautions:
1. Power, input and output (I/O) wiring must be in accordance with Class I, Division 2 wiring methods - Article 501- 4(b) of the National Electrical Code, NFPA 70 or as specified in section 18-152 of the Canadian Electrical Code for installations within Canada and in accordance with the authority have jurisdiction.
2. Acceptable for use in Class I, Division 2, Groups A, B, C and D Hazardous Locations or non- Hazardous Locations only.

⚠ WARNING

RISK OF EXPLOSION OR EQUIPMENT DAMAGE

Follow strictly the following recommendations to avoid an explosion and physical injury:
Compatibility: Power, input and output (I/O) wiring must be in accordance with Class I, Division 2 wiring methods - Article 501- 4(b) of the National Electrical Code, Groups A, B, C and D Hazardous, NFPA 70 or as specified in section 18-152 of the Canadian Electrical Code for installations within Canada and in accordance with the authority having jurisdiction.
Confirm that the location is not subject to any risk of explosion before connecting or disconnecting equipment, replacing or wiring modules.
Before disconnecting, replacing or wiring modules. Confirm that the power supply has been turned OFF.
Before turning ON, sweep front panel with a wet duster.

Failure to follow this instruction can result in death, serious injury, or equipment damage.

⚠ WARNING

LOSS OF CONTROL

• The designer of any control scheme must consider the potential failure modes of control paths and, for certain critical control functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are emergency stop and overtravel stop.
• Separate or redundant control paths must be provided for critical controlfunctions.
• System control paths may include communication links. Consideration must be given to the implications of unanticipated transmission delays or failures of the link. (*)
• Each implementation of a Magelis XBT GT must be individually and thoroughly tested for proper operation before being placed into service.

Failure to follow this instruction can result in death, serious injury, or equipment damage.

(*) For additional information, refer to NEMA ICS 1.1 (latest edition), “Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control” and to NEMA ICS 7.1 (latest edition), “Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems”.

Specifications

Environment	XBT GT series
Compliance with standards	IEC 61131-2, IEC61000-6-2,CISPR11(Class A) UL 508, CSA C22.2, No 14 & No213
Product certification	CE, UL/cUL, CSA, Class 1 Div 2 T4A* (UL & CSA)
Operating temperature	0°C … + 50°C (32°F … 122°F)
Storage temperature	-20 °C… + 60°C (-4°F … 140°F)
Humidity (without condensation)	10% … 90%
Protection (front panel)	IP 65 - (IEC 60529) Enclosure Type 4, 4X Indoor use with Screen Installation Fasteners only
Protection (rear panel)	IP 20 - (IEC 60529)
ESD withstand	IEC 61000 - 4 - 2 6kV, contact, 8kV air
Radiated radio frequency electromagnetic field	IEC 61000 - 4 - 3 10 V / m
Electrical fast transient burst	IEC 61000- 4 - 4 2kV (power supply and I/O) 1kV other ports
High energy surges	IEC 61000 - 4 - 5 1KV (Differential Mode on power supply) 2KV (Common Mode on power supply)
Shocks	IEC 60068 - 2 - 27 1/2 sinusoidal pulse for 11ms, 15 g on 3 axes
Vibration	IEC 60068 - 2 - 27 3.5mm 5 Hz to 9 Hz 1 g. 9 Hz to 150 Hz
Pollution Degree	Pollution Degree 2

Power Supply	
Supply voltage/ Power consumption	24VDC/30Vrms ClassII XBT GT1100/1130: 7W XBT GT2110: 18W XBT GT2120/2130/2220/2330: 26W
Voltage limits	19.2 to 28.8 VDC

Package Contents

The following items are included in the XBT GT's package. Before using the XBT GT, please confirm that all items listed here are present:

- XBT GT Unit
- Power Plug
- Quick Reference Guide
- Screw Installation Fasteners (4)
- Installation Gasket

This unit has been carefully packed, with special attention to quality.
However, should you find anything damaged or missing, please contact your local Schneider Electric distributor immediately.

Options

XBT GT optional items include cables, adapters, screen editor software and other items. For more information about these optional items, please refer to individual XBT GT catalogs.

Ethernet and Serial Ports RJ45 connection

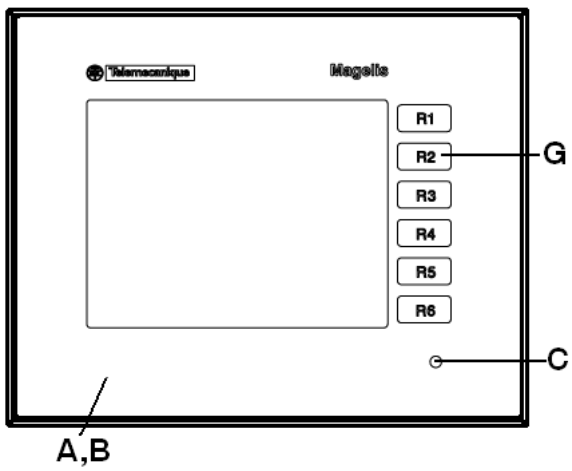
⚠ WARNING

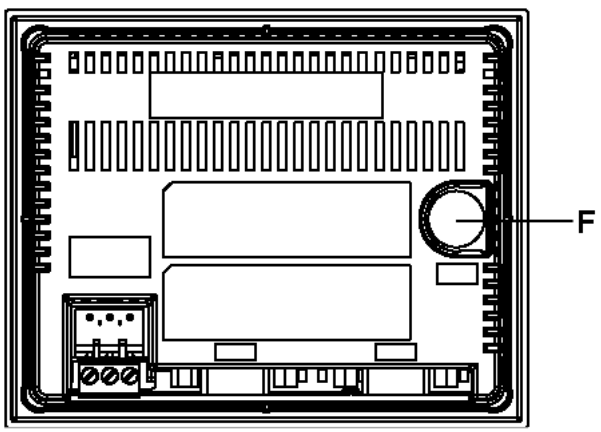
RISK OF UNINTENDED EQUIPMENT OPERATION AND EQUIPMENT DAMAGE

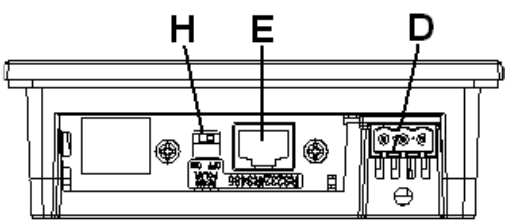
Do not connect serial cable to Ethernet port or vice versa.
Ethernet and serial ports are clearly marked.
Both the Ethernet and the serial ports use a standard RJ45 connection, making it possible to improperly connect the communication cables to each other.

Failure to follow this instruction can result in death, serious injury, or equipment damage.

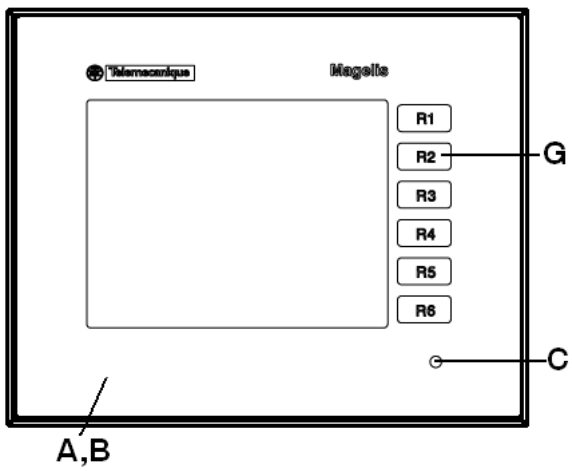
XBT GT1100



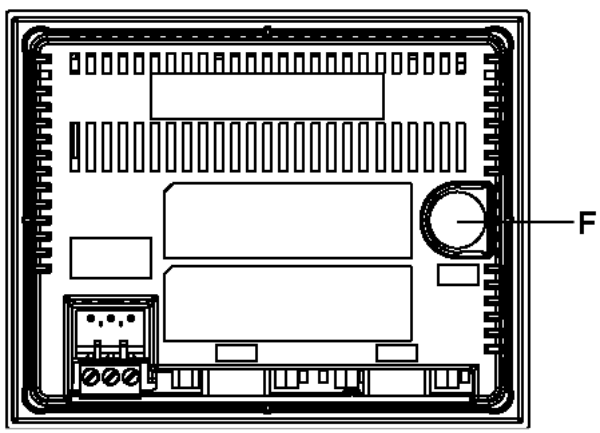


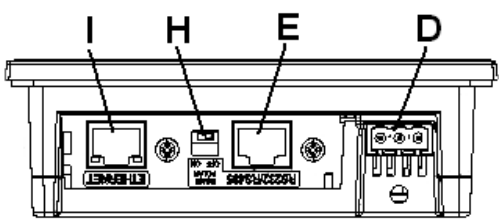


A: Display
B: Touch Panel
C: Power LED
D: Power Input Terminal Block
E: Serial I/F (host 8 pin RJ45)
F: Tool Port Connector
G: Function Switches (R1 to R6)
H: RS485 Line Polarization Switch

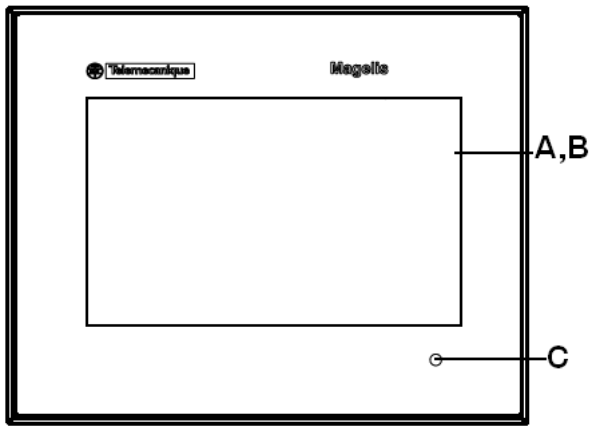


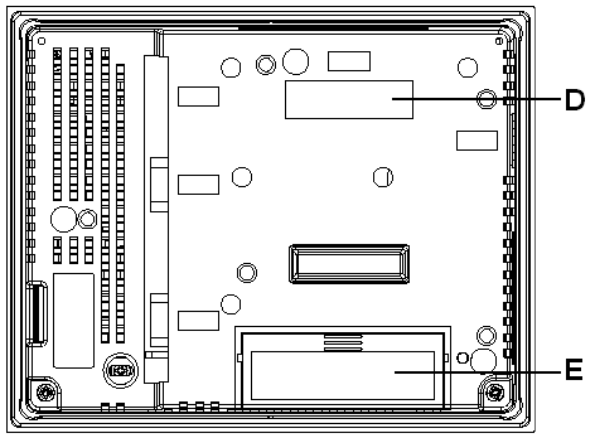
A: Display
B: Touch Panel
C: Power LED
D: Power Input
E: Serial I/F 8 pin RJ45
F: Tool port Connector
G: Function Switches (R1 to R6)
H: RS485 Line Polarization Switch
I: Ethernet Interface

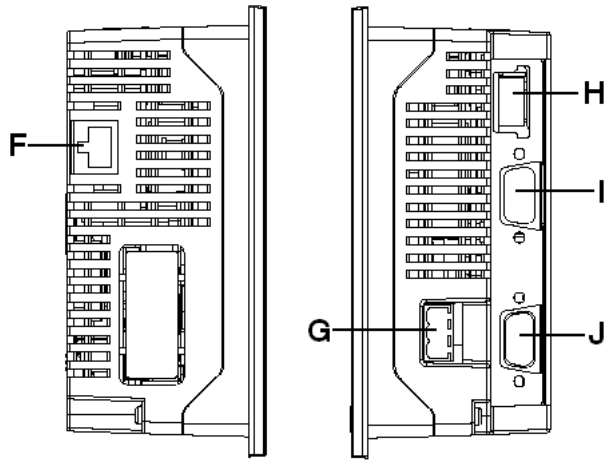




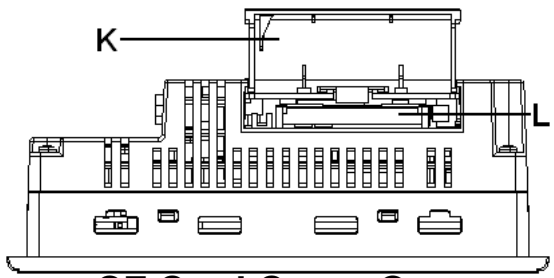
XBT GT2000 Series







Right **Left**



CF Card Cover Open

A: Display
B: Touch Panel
C: Status LED

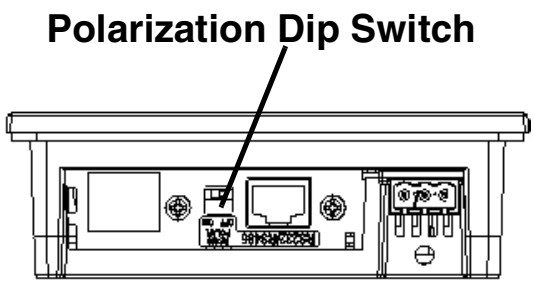
LED	XBT GT Status
Green (lit)	Normal operation
Orange (lit)	Backlight burnout is detected
Orange (blinking)	During Software startup
Red (lit)	When Power is turned ON
Not lit	Power is OFF

D: Expansion unit Interface
E: CF Card Access Lamp (except XBT GT2110)
E: Ethernet Interface (except XBT GT2110/2220)(10Base-T/ 100Base-TX)
G: Power Input Terminal Block
H: USB Interface (USB1.1)
I: Serial Interface COM1
J: Serial Interface COM2
K: CF Card Cover (except XBT GT2110)
L: CF Card Socket

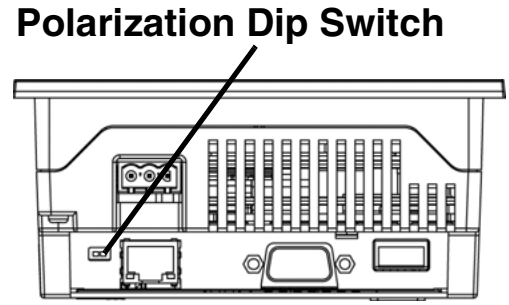
RS485 Line Polarization DIP Switch

On XBT GT1000/2000, the RS485 Line Polarization Switch is located next to the RJ45 serial Port.

The following illustration is an example of RS485 Line Polarization Switch on XBT GT unit.



XBT GT1000

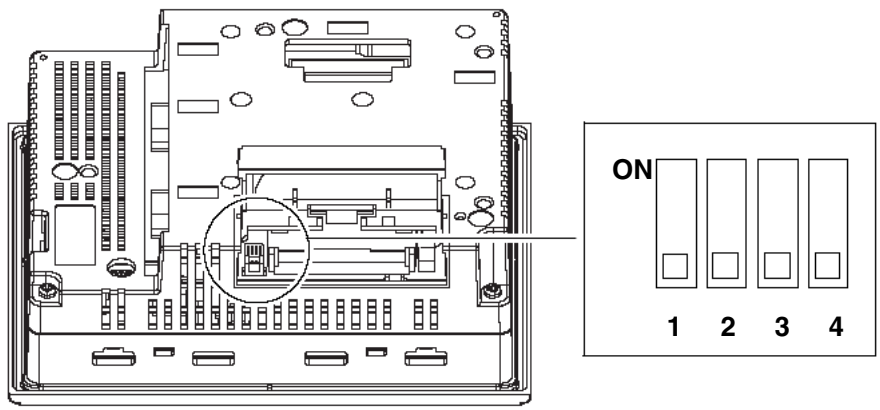


XBT GT2000

Polarization Dip Switch	Function	ON	OFF	Note
1	Controls the polarization of RS485 serial line.	RS485 Serial line is polarized (620 Ω pull up on D1 and 620 Ω pull down on D0).	No polarization.	The polarization shall be activated if Modbus protocol has to be implemented and no other equipment performs polarization on the bus.

CF Card DIP Switches

On XBT GT2120/2130/2220/2330,the CF Card DIP Switches are located inside the CF Card Cover. The following illustration display the CF Card DIP Switches.



DIP Switches	Function	ON	OFF	Note
1	This DIP switch setting controls the startup from a CF Card			(*): Startup data is required in the CF Card.
	When there is not startup data in the XBT GT memory.	Startup is done from the CF Card(*) and the data is also transferred into the XBT GT memory.	A system message appears	
	When there is valid startup data in the XBT GT memory.	Startup is done from the CF Card* and the XBT GT memory is updated.	Start up is done from the XBT GT memory.	
2	This dip switch allows download application on XBT GT products.	Download is available.	Download is not available.	-
3	Reserved	-	-	-
4	This setting controls the forced closing of the CF Card cover.	Forced close enabled.	Forced close disabled.	Used when CF Card cover is damaged.

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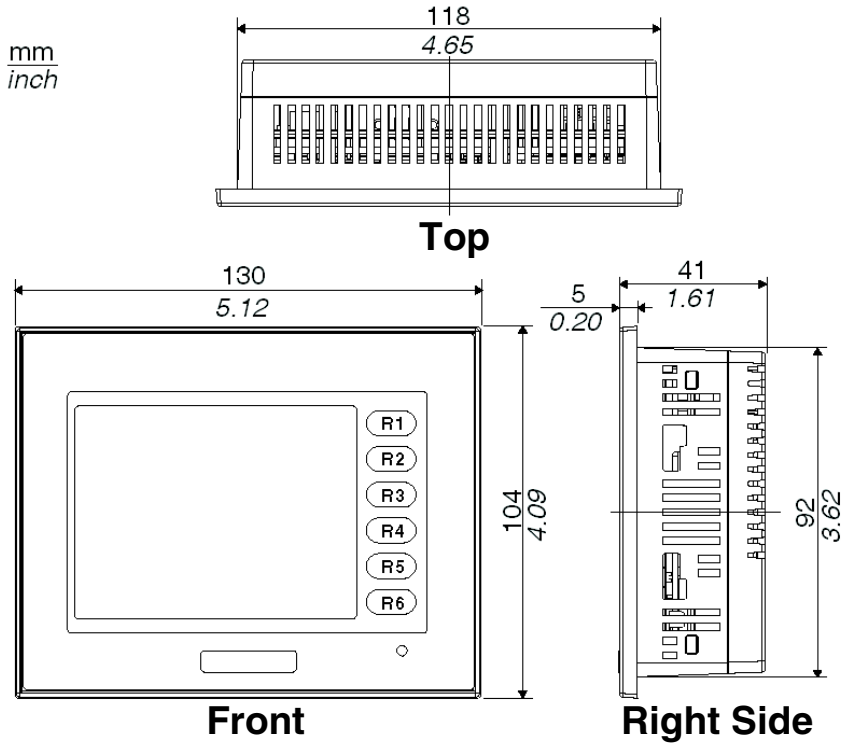
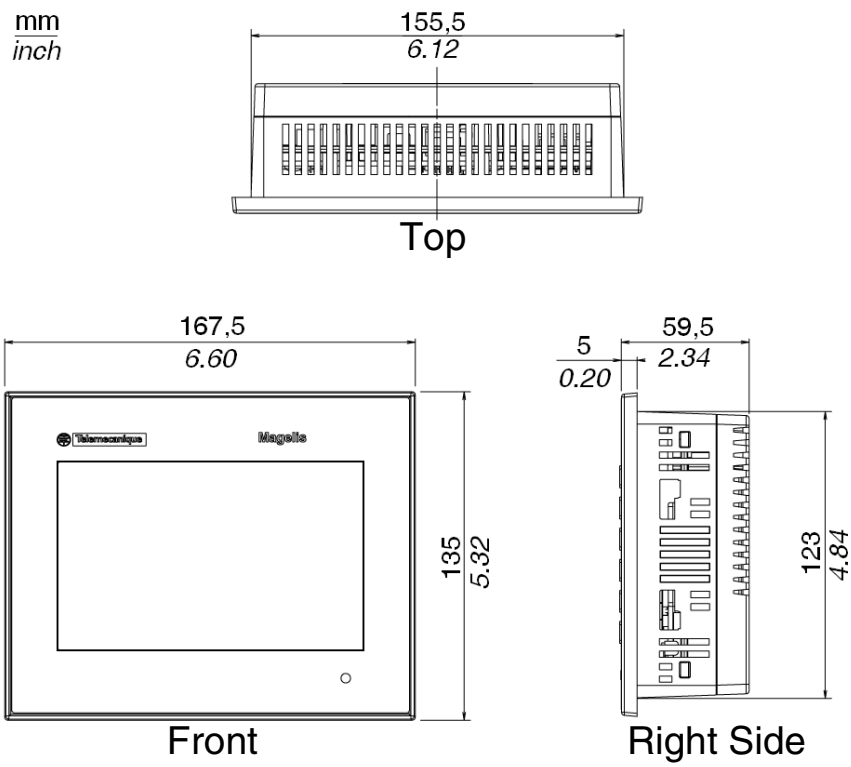
XBT GT1000 Series



XBT GT2000 Series



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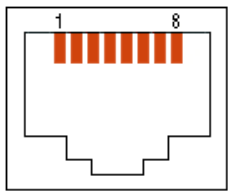
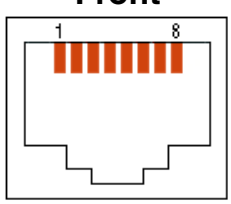
XBT GT1000/2000 Series Serial Interface (RJ45)

This interface is used to connect the XBT GT1000 to remote equipment, via an RS232C or RS485 cable. The connector used is a RJ45-type connector.

Pin Arrangement	Pin #	Signal Name	Direction	Meaning
Front 	1	RxD	Input	Receive Data (RS232C)
	2	TxD	Output	Send Data (RS232C)
	3	Not connected	-	-
	4	D1	Output/Input	Transfer Data (RS485)
	5	D0	Output/Input	Transfer Data (RS485)
	6	RTS	Output	Request To Send
	7	Not connected	-	-
	8	SG	-	Signal Ground

This interface is used to connect the XBT GT2000 to remote equipment, via an RS485cable. The connector used is a RJ45-type connector.

Pin Arrangement	Pin #	Signal Name	Direction	Meaning
Front 	1	Not connected	-	-
	2	Not connected	-	-
	3	Not connected	-	-
	4	D1	Output/Input	Transfer Data (RS485)
	5	D0	Output/Input	Transfer Data (RS485)
	6	RTS	Output	Request To Send
	7	Not connected	-	-
	8	SG	-	Signal Ground

⚠ WARNING

RISKS OF FIRE, UNINTENDED EQUIPMENT OPERATION, AND EQUIPMENT DAMAGE

An excessive weight or stress on communication cables can cause a sudden disconnection and consequently a short-circuit, fire or incorrect unit operation. Also, a risk of power cable and communication line damage occurs when mounting the product on installation panel or cabinet with Power cable or Communication line already wired to unit

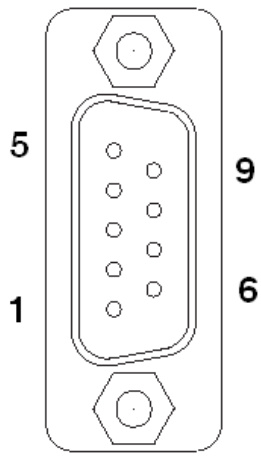
- Fix securely communication lines onto installation panel or cabinet to avoid stress on connection. Use RJ45 connectors with locking system.
- Install and fasten unit on installation panel or cabinet prior to connecting power supply and communication lines.
- Unwire power supply and communication lines prior to uninstalling unit from panel or cabinet.

Failure to follow this instruction can result in death, serious injury, or equipment damage.

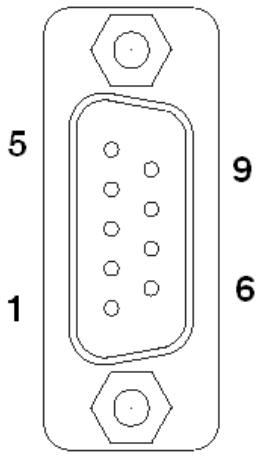
XBT GT2000 Series Serial Interface (Sub-D9-SIO)

This interface is used to connect the XBT GT to remote equipment, via an RS232C or RS422 cable. The connector used is a Sub-D9-type connector.

The following table describes the Sub-D9-type connector via an RS232C cable.

Pin Connection	Pin	Signal Name	Direction	Meaning
	1	CD	Input	Carrier Detect
	2	RD(RXD)	Input	Receive Data
	3	RD(RXD)	Output	Send Data
	4	ER(DTR)	Output	Data Terminal Ready
	5	SG	-	Signal Ground
	6	DR(DSR)	Input	Data Set Ready
	7	RS(RTS)	Output	Request to Send
	8	CS(CTS)	Input	Send Possible
	9	CI(RI)/VCC	Input	Called status display/ +5V,5% Output: 0.25A
	Shell	FG	-	Frame Ground (Common with Signal Ground)

The following table describes the Sub-D9-type connector via an RS422 cable.

Pin Connection	Pin	Signal Name	Direction	Meaning
	1	RDA	Input	Receive Data A (+)
	2	RDB	Input	Receive Data B (-)
	3	SDA	Output	Send Data A (+)
	4	ERA	Output	Data Terminal Ready A (+)
	5	SG	-	Signal Ground
	6	CSB	Input	Send Possible B (-)
	7	SDB	Output	Send Data B (-)
	8	CSA	Input	Send Possible A (+)
	9	ERB	Output	Data Terminal Ready B (-)
	Shell	FG	-	Frame Ground (Common with Signal Ground)

Tool Port for XBT GT1000 Series

This interface accepts Serial Data Transfer Cable (XBT ZG915) or USB Data Transfer Cable (XBT ZG925).

Ethernet Interface for XBT GT1130/2130/2330

This interface complies with the IEEE802.3 standard for Ethernet:
- (10 BASE-T) connections for XBT GT1130,
- (10BASE-T/100 BASE-TX) for XBT GT2130/2330.

This interface uses an RJ-45 type modular jack connector.

Compact Flash Memory Card Interface for XBT GT2120/2130/2220/2330

This interface accepts a Compact Flash memory Card.

USB Interface for XBT GT2000 Series

This interface accepts a USB data transfer cable (XBT ZG935).

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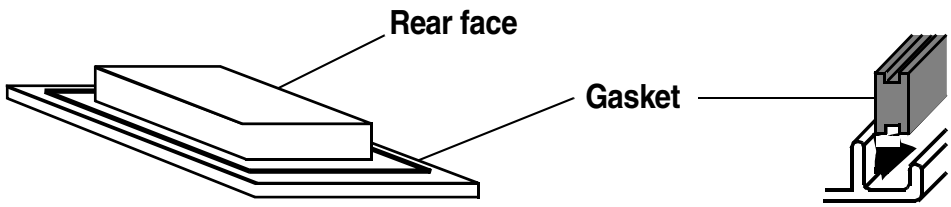
Installation gasket

The gasket is required to absorb vibration and repel liquids.
Place the XBT GT on a smooth, level surface with the display panel facing downward. Check that the
XBT GT's installation gasket is seated securely into the gasket's groove, which runs around the
perimeter of the panel's frame.

Note:
The torque required to tighten these screws is 0.5 Nm (4.4 lb-in).

- Before installing the XBT GT into a cabinet or panel, check that the installation gasket is securely attached to the unit.
- Make sure the gasket's seam is not inserted into any of the unit's corners, only in the straight sections of the groove, preferably in bottom section. Inserting it into a corner may lead to its eventually tearing.
- A gasket which has been used for a long period of time may have scratches or dirt on it, and could have lost much of its dust and drip resistance. Make sure to change the gasket once a year or when scratches or dirt become visible.



⚠ CAUTION

RISK OF EQUIPMENT DAMAGE

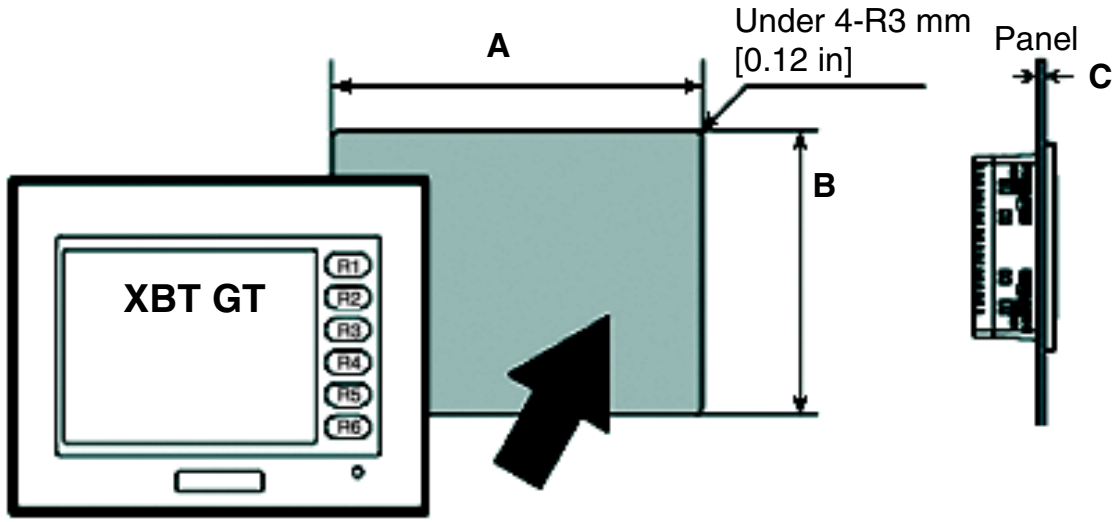
It is strongly recommended to use the installation gasket to maintain IP65/IP20 protection ratings and absorb vibration.

Failure to follow this instruction can result in injury or equipment damage.

Corresponding replacement installation gasket:

XBT GT Unit	Required Installation Gasket
XBT GT1000 Series	XBT ZG51
XBT GT2000 Series	XBT ZG52

Create a panel cut-out and insert the XBT GT into the panel from the front

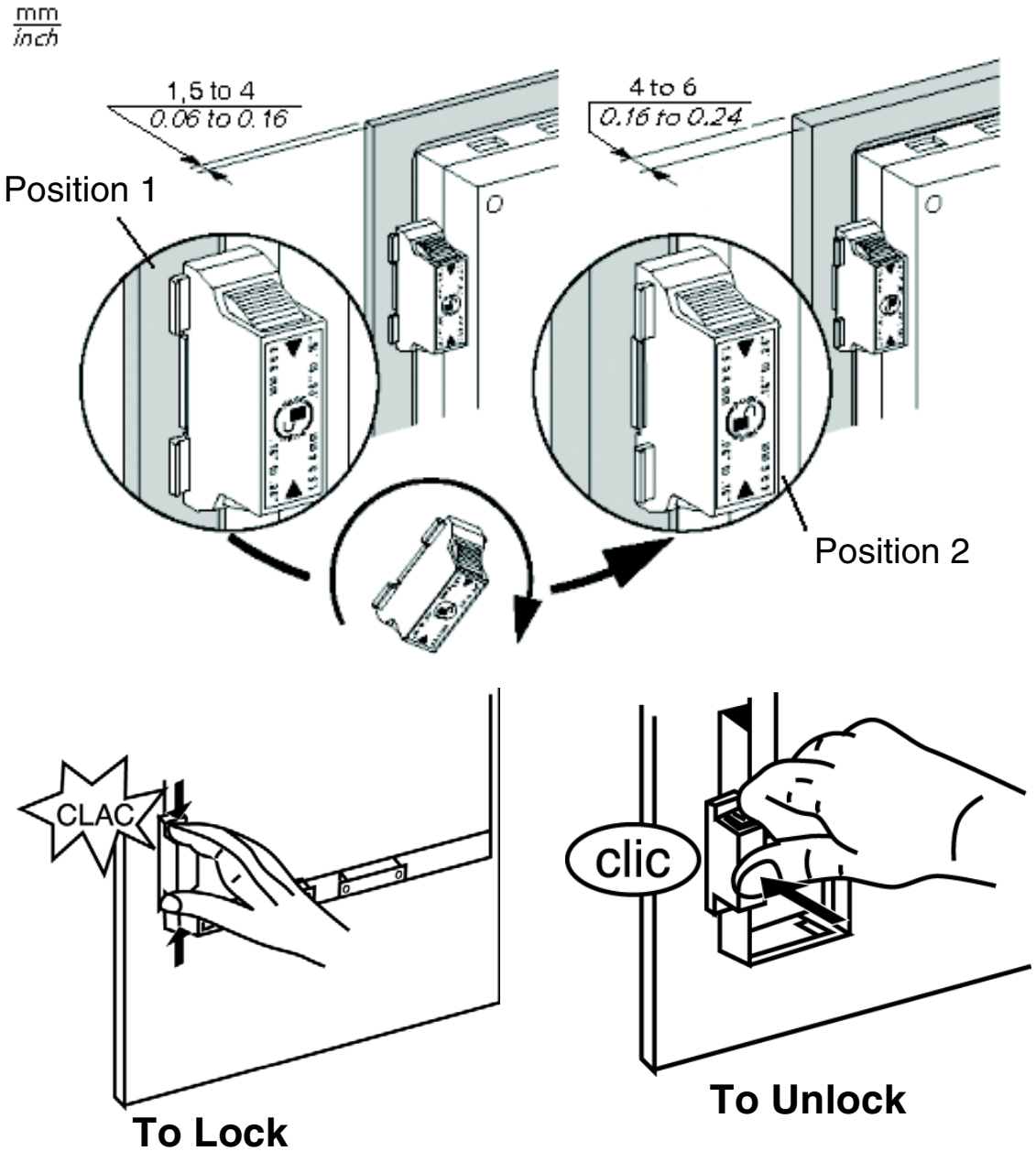


XBT GT	A (mm)	B (mm)	A (in.)	B (in.)	C (mm)	C (in.)
XBT GT1100 **XBT GT1130**	+1 118.5 - 0	+1 92.5 - 0	+0.04 4.67 - 0	+0.04 3.64 - 0	1.6 to 5.0	0.06 to 0.2
XBT GT2110 **XBT GT2120** **XBT GT2130** **XBT GT2220** **XBT GT2330**	+1 156 - 0	+1 123.5 - 0	+0.04 6.14 - 0	+0.04 4.86 - 0	1.6 to 5.0	0.06 to 0.2

Attach the installation fastener from inside the panel

Spring Clip Installation:

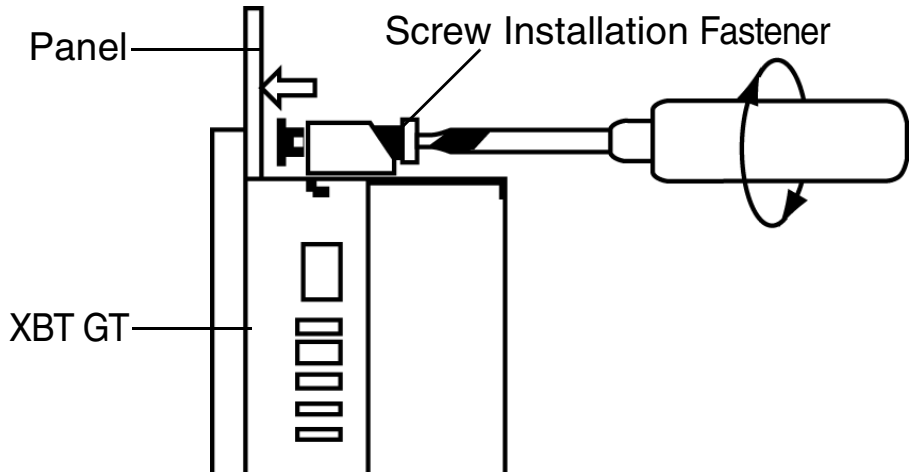
There is only one kind of spring clip used, but it is installed in two different ways. The following figure displays how to adjust, insert, and unlock the spring clip:



Note:
Adjust the Spring clip according to panel's thickness:
- 1.6 mm (0.06 in.) ≤ panel thickness ≤ 4 mm (0.16 in.) (position 1).
- 4 mm (0.16 in.) ≤ panel thickness ≤ 6 mm (0.24 in.) (position 2)

Screw Installation Fastener

The following figure shows the Screw Installation Fastener insertion slot locations. Insert each fastener's hook into the slot and tighten it with a screwdriver. The necessary torque is 0.5 N.m (4.4 lb-in.).



⚠ CAUTION

RISK OF EQUIPMENT DAMAGE

Do not exert more than 0.5 N.m (4.4 in-lb) of torque when tightening the fastener screws.Tightening the screws with excessive force can damage the XBT GT's plastic case.

Failure to follow this instruction can result in injury or equipment damage.

Note:
- Depending on the installation panel's thickness, etc., the number of installation fasteners used may need to be increased to provide the desired level of moisture resistance.
- The necessary torque is 0.5 N.m (4.4 lb-in)

Power Cord Specifications

Follow these steps for a successful installation:

1. Make sure the wire size is between 0.2 and 2.5 mm² (24 - 12 AWG) for the power cords.
2. Twist the wire ends before attaching the terminals.
3. When the Frame Ground terminal is connected, make sure the wire is grounded. Not grounding the XBT GT unit will result in excess noise.

⚠ WARNING

RISK OF ELECTRIC SHOCK AND EQUIPMENT DAMAGE

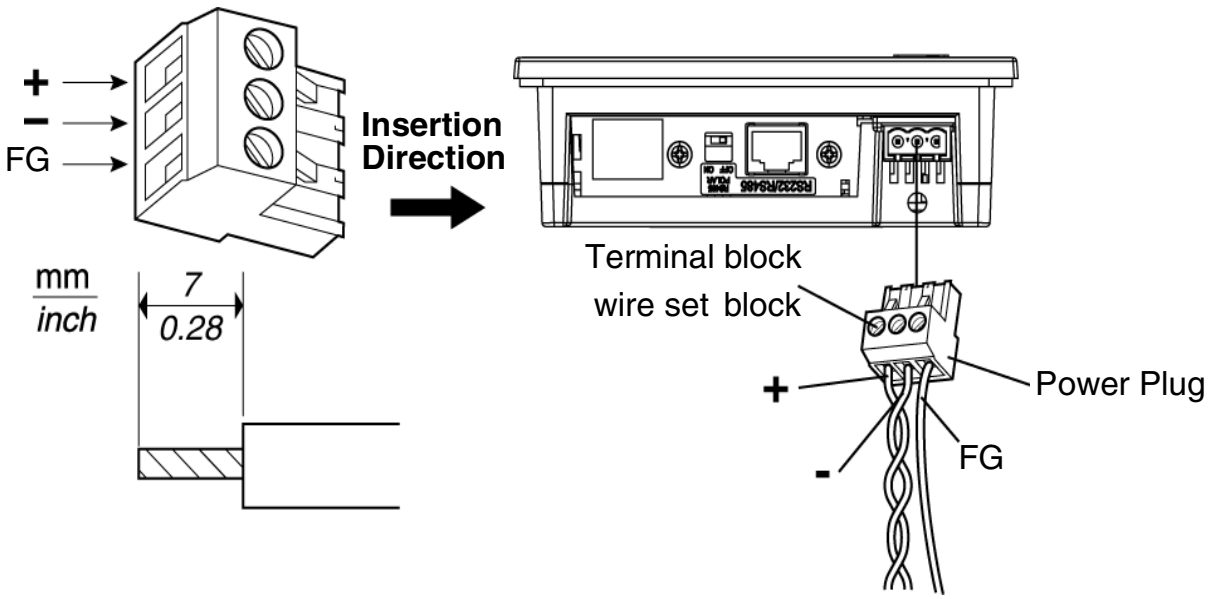
Follow these precautions to avoid risks of electric shocks:

- Be sure the power cord is unplugged from the power outlet when connecting the power terminals to the XBT GT unit.
- The XBT GT1000 and the XBT GT2000 are using only 24V DC power. Using any other level of power can damage both the power supply and the XBT GT unit.
- Since the XBT GT is not equipped with the power switch, be sure to connect a breaker type power switch to the XBT GT's power cord.
- Be sure to ground the XBT GT's FG terminal. Failure to do so can lead to an electrical shock or XBT GT malfunction.

Failure to follow this instruction can result in death, serious injury, or equipment damage.

Grounding the wire and conductor length

Grounding is required to ensure EMC level immunity. The Conductor Type is simple or stranded wire.
The following illustration displays the conductor length:



Connecting the XBT GT Power Cord

When connecting the power cord, follow these steps:

1. Remove all power connected to XBT GT.
2. Remove the clear plastic cover on end wire (7mm or 0.28inch).
3. Loosen the screws from the middle three terminals.
4. Ensure the proper wire is installed into the correct position on the Power Plug.
5. Confirm the correct connection points.
6. Torque the mounting screws to the required torque.

Note:
The torque required to tighten these screws is 0.5 Nm (4.4 lb-in).

Introduction

The XBT GT unit's backlight is not user replaceable. Contact your Schneider Electric representative for technical support.

⚠ DANGER

RISKS OF UNINTENDED EQUIPMENT OPERATION AND ELECTRIC SHOCK.

If the operator fails to notice that the backlight is burned out and touches the panel, unintended equipment operation can occur.
If the XBT GT unit's "Backlight Control" has burned out and the unit is not set to Standby Mode, the touch panel remains active.
Do not create XBT GT touch panel switches for system functions which may cause injury and/or equipment damage if activated accidentally.
Do not disassemble the XBT GT or attempt to repair/replace the backlight. Unshielded high voltages are present within the backlight even when the power is off.

Failure to follow this instruction will result in death, serious injury, or equipment damage.

Determining if the backlight has burned out

If your XBT GT unit's backlight suddenly turns OFF, use the following steps to determine if the backlight is actually burned out:

- If the XBT GT unit's "Backlight Control" is not set and the screen has gone blank, your backlight is burned out.
- If the XBT GT unit's "Backlight Control" is set to Standby Mode and the screen has gone blank, and touching the screen or performing another input operation does not cause the display to reappear, your backlight is burned out.

Corresponding Replacement Backlights:

XBT GT Unit	Required Backlight Model
XBT GT1000 Series	Cannot be replaced by User(1)
XBT GT2000 Series	Cannot be replaced by User(1)
(1): The unit must be returned to an authorized Schneider Electric repair center for backlight replacement	

Note:
Backlight models are not interchangeable.

⚠ WARNING

RISK OF BATTERY EXPLOSION

Do not attempt to replace the XBT GT battery.
If the battery is incorrectly replaced, the battery may explode the next time you use it.
To replace the XBT GT battery, contact the Schneider Electric support center for the address of your local Schneider Electric representative.

Failure to follow this instruction can result in death, serious injury, or equipment damage.